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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20580

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

In the Matter of)
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)

Amendment of Section)
15.247(a)(1)(ii) of the)
Rules on Spread Spectrum)
Operation)
_____)

RM-8608

COMMENTS OF
SPECTRALINK CORPORATION, INC.

SpectraLink Corporation ("SpectraLink") hereby submits its Comments on Symbol Technologies, Inc.'s ("Symbol's") Petition for Rulemaking to reduce the minimum number of frequency hopping channel assignments from 75 to 15 in the 2400-2483.5 MHz band and to increase the maximum permissible bandwidth.^{1/}

SpectraLink concurs with Symbol that the reduction of frequency-hopping channel assignments, coupled with a corresponding increase in the permissible occupied transmitter bandwidth, will allow a higher data transmission throughput and facilitate the development of advanced wireless data applications to meet consumer demand. Nevertheless, to maximize the possibility of sharing the band, SpectraLink urges the Commission to stipulate a maximum transmitter dwell time of 400 msec for frequency-hopping devices that use a minimum of 15 hopping channels in the 2400-2483.5 MHz band.

^{1/} See *Symbol Technologies, Inc. Petition for Rulemaking*, RM 8608, Public Notice 2059 (released February 28, 1995), *Order Granting Additional Time for Comment*, RM-8608, 8609 (released March 30, 1995).

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I. STATEMENT OF INTEREST

SpectraLink was founded in 1989 to meet the existing market demand for a communications product that could provide wireless telephone communications as an adjunct to the business community's existing PBX and Centrex telephone systems. From its inception, SpectraLink has invested substantial amounts of human and financial resources designing, manufacturing, and marketing the SpectraLink Pocket Communications System. The Pocket Communications System is a spread spectrum, frequency-hopping device operating in the 902-928 MHz band in compliance with Section 15.247(a)(1)(i) of the Commission's Rules. SpectraLink recently petitioned the Commission to amend Section 15.247(a)(1)(i)^{2/} and Section 15.247(b)^{3/} of the Commission's Rules to reduce the spectral occupancy of frequency-hopping spread spectrum devices operating in the 902-928 MHz band from a maximum of nearly 26 MHz to approximately 13 MHz.^{4/} As a manufacturer of wireless telephone equipment, SpectraLink has a keen interest in maximizing spectrum efficiency for shared spectrum bands.

II. SPECTRALINK SUPPORTS ADOPTION OF SYMBOL'S PROPOSAL WITH A MINOR MODIFICATION

Critical to the success of wireless data applications is the achievement of near-wired speeds for the data network backbones. In the case of 2400-2483.5 MHz, assuming a maximum occupied bandwidth of 1 MHz and practical digital modulation techniques appropriate for interior

^{2/} Section 15.247 (a)(1)(i) of the Commission's Rules provides in relevant part that "frequency hopping systems operating in the 902-928 MHz band shall use at least 50 hopping frequencies." 47 C.F.R. § 15.247(a)(1)(i) (1993).

^{3/} Section 15.247(b) of the Commission's Rules provides in relevant part "the maximum peak output power of the transmitter shall not exceed 1 Watt." 47 C.F.R. § 15.247(b).

^{4/} See SpectraLink Corporation Petition for Rulemaking, RM-8609 (filed January 18, 1995).

mobile applications, a modulation efficiency rate of 1 bit/sec/Hz is the realizable upper limit. This limits frequency-hopping devices to speeds considerably less than that attainable either by direct sequence techniques, or wired solutions. Under the current Part 15 rules for the 2400-2483.5 MHz band, frequency-hopping devices are limited to approximately 1 Mbit/s.

Under Symbol's proposal, the maximum permissible occupied bandwidth in the 2400-2483.5 MHz band would increase to about 5.5 MHz, thereby increasing the data throughput to over 5 Mbit/s, which is nearly the speed of wired 10Base-T Ethernet networks (10 Mbit/s). The resulting performance improvement will serve the wireless local area network, data collection, and point-of-sale terminal industries well, because networks based on wireless topologies will reduce the costs of implementation and improve overall service to users and the public. Nevertheless, SpectraLink urges the Commission to modify Symbol's proposal by requiring a maximum transmitter dwell time of 400 msec for frequency-hopping devices that use a minimum of 15 hopping channels in the 2400-2483.5 MHz band.

The current rules for frequency-hopping devices in the 2400-2483.5 MHz band require a minimum of 75 hopping channels. This results in an average channel occupancy over a 30-second interval of 400 msec ($30 \text{ sec} \div 75 = 0.4 \text{ sec}$). Thus, a frequency hopper with a hopping rate of exactly 400 msec per channel will occupy all 75 channels in 30 seconds. In contrast, a frequency hopper with 15 channel assignments will have an average channel occupancy over a 30-second interval of 2 seconds ($30 \text{ sec} \div 15 = 2.0 \text{ sec}$). Thus, a frequency hopper with a hopping rate of exactly 2 seconds per channel will occupy all 15 channels in 30 seconds.

SpectraLink is concerned that a dwell time of 2 seconds per channel may force other wireless applications that share the same frequency band to wait for up to 2 seconds, if the device uses a monitoring mechanism like "carrier sense" or "listen before talk." A two-second delay can

be extremely disruptive to some data applications, causing session time-outs or off-line interruptions. The result is that channels are being used five times over a 30-second interval at an occupancy duration (dwell time) of 400 msec. SpectraLink believes that transmitter dwell time of 400 msec is necessary to increase the likelihood that other devices that share the 2400-2483.5 MHz band can access the spectrum and successfully complete a transmission.

SpectraLink supports Symbol's Petition for Rulemaking for a reduction in the number of hopping channels in the 2400-2483.5 MHz frequency band, provided that the transmitted dwell time of 400 msec is adopted.

Respectfully Submitted,

SPECTRALINK CORPORATION, INC.

A handwritten signature in dark ink, appearing to read "Thomas Ohlsson", is written over a horizontal line.

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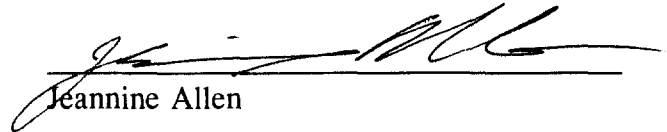
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Dated: April 7, 1995

CERTIFICATE OF SERVICE

I hereby declare that the foregoing Comments of Spectralink Corporation, Inc. were hand delivered this 7th day of April, 1995, to the parties on the attached service list.


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